MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department of Community Health
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New updates in this issue:

- **Michigan Surveillance:** Flu activity continues decreasing; hospitalizations and deaths still elevated.
- **National Surveillance:** Nationwide flu activity decreased slightly.
- **International Surveillance:** The early arriving winter influenza season continues to intensify across parts of North America and much of Europe.

****2009 Influenza A (H1N1) virus Updates****

On August 17 and September 18, MDCH released guidance for healthcare providers, laboratorians and public health personnel regarding appropriate patients for influenza testing at the MDCH lab and reporting of influenza hospitalizations and deaths. The guidance is available at www.michigan.gov/h1n1flu.

Please continue to reference the State of Michigan's novel 2009 influenza A (H1N1) website at www.michigan.gov/h1n1flu and the MDCH influenza website at www.michigan.gov/flu for additional information. Local health departments can find guidance documents in the MI-HAN document library. In addition to the previous websites, additional laboratory-specific information is located at the Bureau of Laboratories H1N1 page at http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

International (WHO H1N1 2009 update 75 [edited], November 20): As of 15 November 2009, worldwide more than 206 countries and overseas territories or communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009, including over 6770 deaths.

As many countries have stopped counting individual cases, particularly of milder illness, the case count is likely to be significantly lower than the actual number of cases that have occurred. WHO is actively monitoring the progress of the pandemic through frequent consultations with the WHO Regional Offices and member states and through monitoring of multiple sources of data.

The situation remains similar since the last update. In temperate regions of the northern hemisphere, the early arriving winter influenza season continues to intensify across parts of North America and much of Europe. However, there are early signs of a peak in disease activity in some areas of the northern hemisphere.

In the United States, influenza transmission remains active and geographically widespread, although disease activity appears to have recently peaked in most areas except in the northeastern United States. In Canada, influenza transmission continues to intensify without a clear peak in activity; the ILI consultation rate, which has been highest among children aged 5-19, continues to significantly exceed mean rates observed over the past 12 influenza seasons.

In Europe, widespread and increasing transmission of pandemic influenza virus was observed across much of the continent but the most intense circulation of virus occurred in northern, eastern, and southeastern Europe. Transmission appears to have peaked in few countries of Western Europe including Iceland, Ireland, the UK (Northern Ireland), and Belgium after a period of sustained intense transmission. Further east, a number of countries reported sharp increases in the rates of ILI** (Serbia, Moldova, Norway, Lithuania, Georgia) or ARI (Belarus, Bulgaria, Romania, and Ukraine). A moderate or greater impact on the healthcare system was reported in parts of northern and southeastern Europe. Greater than 20% of all sentinel respiratory specimens tested positive for influenza in at least 20 countries, with ≥ 50% of samples testing positive for influenza in Spain, Portugal, Estonia, Slovenia,

Slovakia, Moldova, Bosnia and Herzegovina, Greece, Norway, Finland, Denmark, Belgium, Iceland, and Ireland. Over 99% of subtyped influenza A viruses in the Europe were pandemic H1N1 2009.

In Central and Western Asia, increasing diseases activity and pandemic influenza virus isolations continues to be reported in several countries. A high intensity of respiratory diseases with increasing trend was reported in Kazakhstan. Recent increases in rates of ILI or ARI have been observed in Uzbekistan and in parts of Afghanistan (particularly in the capital region and in southern and northeastern provinces). In Israel, sharp increases in rates of ILI and pandemic virus detections have been reported in recent weeks.

In East Asia, influenza transmission remains active. Intense influenza activity continues to be observed in Mongolia with a severe impact on the healthcare system; however, disease activity may have recently peaked in the past 1-2 weeks. In Japan, influenza activity remains elevated but stable nationally, and may be decreasing slightly in populated urban areas. A small number of seasonal H3N2 and H1N1 influenza viruses continue to be detected in China and South East Asia, though the proportion of seasonal viruses is declining in relation to the proportion of pandemic influenza H1N1.

In tropical zone of the Americas and Asia, the intensity of influenza transmission is variable. In the tropical areas of Central and South America, most countries continue to report declining influenza activity, with the exception of Peru and Colombia. In the Caribbean Epidemiology Centre (CAREC) countries, after a recent peak of disease activity, rates of ARI have declined over the past 3-4 weeks. With the exception of Sri Lanka, overall transmission continues to decline in most parts of tropical South and Southeast Asia. In Hong Kong SAR, rates of ILI have returned baseline after a recent wave of predominantly pandemic H1N1 influenza in September and October.

In the temperate region of the southern hemisphere, little pandemic influenza activity has been reported.

The countries and overseas territories/communities that have newly reported their first deaths among pandemic (H1N1) 2009 confirmed cases since the last web update: Sri Lanka, Pakistan and Slovenia.

Region	**Cumulative total**	
	as of 15 November 2009	
	Cases*	Deaths
WHO Regional Office for Africa (AFRO)	14950	103
WHO Regional Office for the Americas (AMRO) **	190765	4806
WHO Regional Office for the Eastern Mediterranean (EMRO)	28751	188
WHO Regional Office for Europe (EURO)**	over 79000	at least 350
WHO Regional Office for South-East Asia (SEARO)	45844	710
WHO Regional Office for the Western Pacific (WPRO)	166750	613
Total	over 526060	at least 6770

*Given that countries are no longer required to test and report individual cases, the number of cases reported actually understates the real number of cases. **The total number of cases are no longer reported from these regions

******Influenza Surveillance Reports******

Michigan Disease Surveillance System: The week ending November 21 saw aggregate flu-like and 2009 novel H1N1 case reports continue to decrease from the previous week's levels. Individually reported influenza cases have increased to levels seen two weeks ago. Cases reported this week are notably higher than what was seen during the identical week of the previous year.

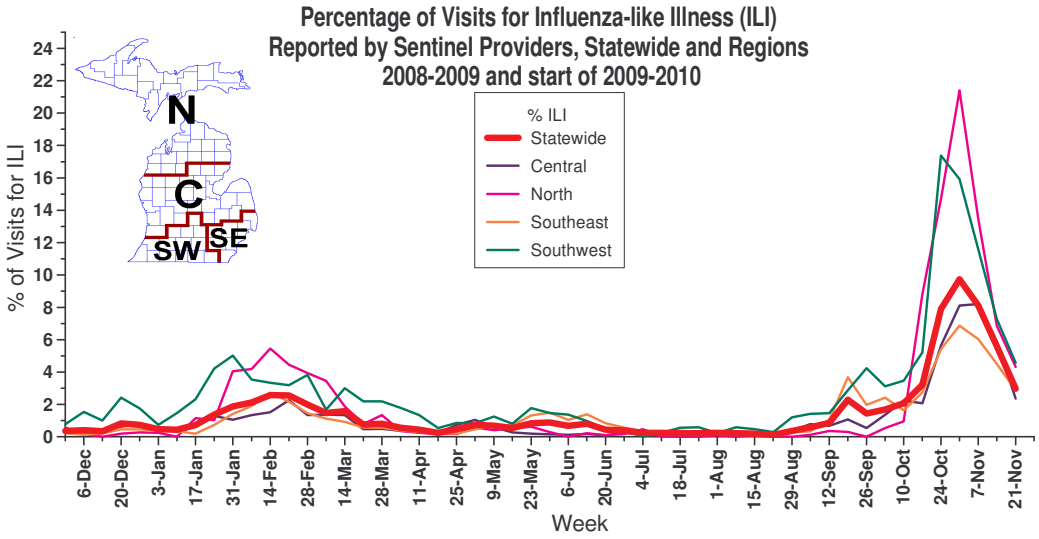
During the week of November 15-21, 2009, 25,074 cases of flu-like illness and confirmed and probable cases of seasonal and novel influenza were reported in Michigan. 320 hospitalizations and 13 deaths

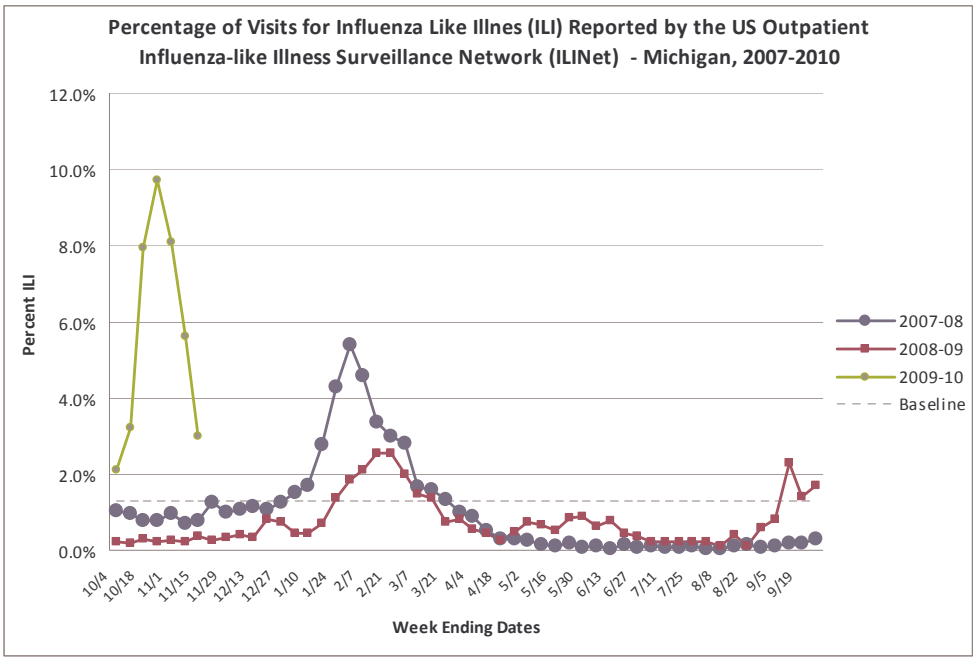
associated with influenza were also reported during this time. This report is updated every Tuesday by 5:00 pm and can be accessed at a link on this website: http://www.michigan.gov/h1n1flu.

Emergency Department Surveillance: Emergency department visits from both constitutional and respiratory complaints were slightly lower than last week's levels. Both constitutional and respiratory complaints are higher compared to what was seen this time last year. There was 1 constitutional alert generated in the C(1) Influenza Surveillance Region last week. Two respiratory alerts were generated in the C(2) Influenza Surveillance Region last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were mixed. Thermometer sales saw a slight decrease in sales compared to the previous week. The remainder of the indicators held steady near their previous weeks' sales numbers. All sales indicators, with the exception of thermometer sales, which are slightly higher, are comparable to levels seen at this time last year.

Sentinel Provider Surveillance (as of November 25, 2009): During the week ending November 21, 2009, the proportion of visits due to influenza-like illness (ILI) decreased to 3.0% overall; 392 patient visits due to ILI were reported out of 13,255 office visits. Forty sentinel sites provided data for this report. Activity decreased in all four surveillance regions: Central (2.4%), Southeast (2.9%), Southwest (4.6%) and North (4.3%). Please note that these rates may change as additional reports are received.





As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of November 21): During the week of November 15-21, MDCH Bureau of Laboratories identified 49 novel H1N1 influenza A isolates. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 544 influenza isolates:

- Novel Influenza A (H1N1): 531
- Influenza A unsubtypeable: 12
- Influenza B: 1

14 sentinel labs reported for the week ending November 21, 2009. 2 labs reported decreasing but still elevated levels of influenza A positives (SE), 4 labs had decreasing moderate levels of A positives (SE, SW, C), 5 labs reported decreasing low or sporadic numbers of Flu A positives (SW,C, N), and 3 labs reported no flu A positives (C, N). No labs reported influenza B positives.

Michigan Influenza Antigenic Characterization (as of November 25): One novel H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010 Southern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of November 25): Results are currently not available for antiviral resistance at CDC for the 2009-2010 season.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at http://www.cdc.gov/H1N1flu/recommendations.htm.

Influenza-Associated Pediatric Mortality (as of November 25): Four influenza-associated pediatric mortalities (SE(2), SW, N) associated with novel H1N1 influenza has been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

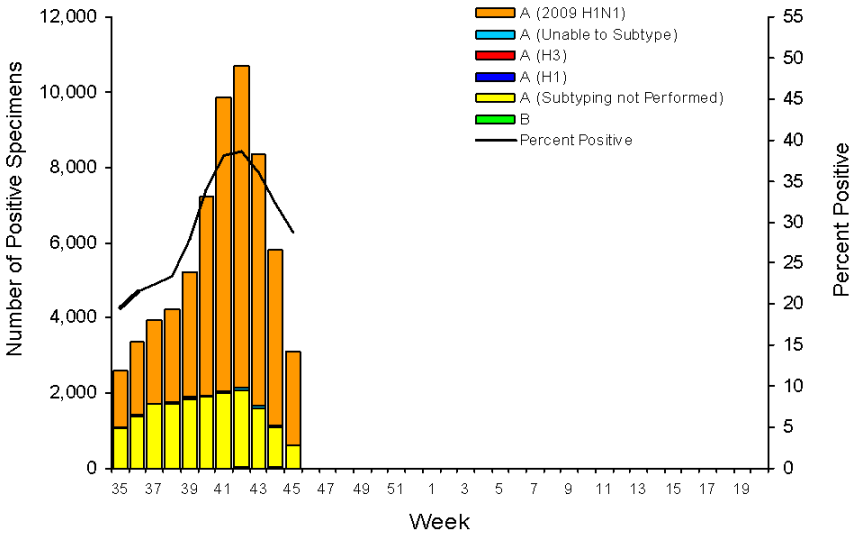
Influenza Congregate Settings Outbreaks (as of November 25): 7 congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and two outbreaks associated with positive influenza A tests (1C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 1 long term care facility.

As of 12:00pm on November 20, 569 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 54, Region 2N - 5, Region 2S – 8, Region 3 - 54, Region 5 - 153, Region 6 - 104, Region 7 - 109, Region 8 - 82) have been reported.

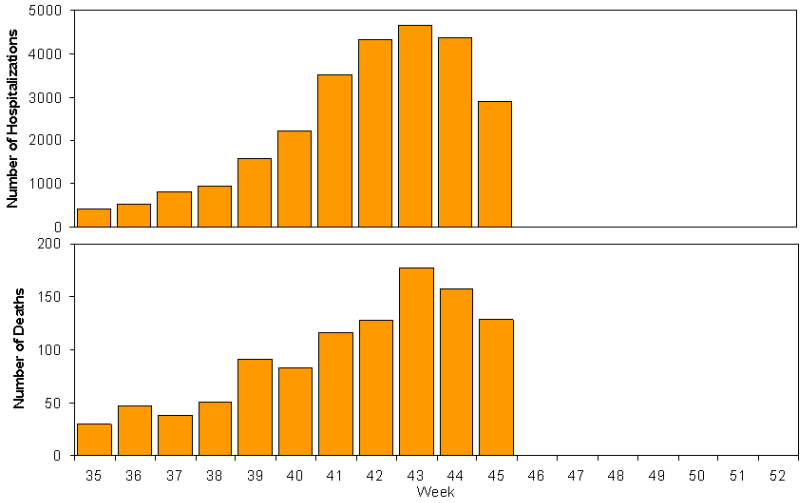
National (CDC [edited], November 20): During week 45 (November 8-14, 2009), influenza activity decreased slightly in the U.S. 3,106 (28.8%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. Over 99% of all subtyped influenza A viruses being reported to CDC were 2009 influenza A (H1N1) viruses. The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold for the seventh consecutive week. Twenty-one influenza-associated pediatric deaths were reported. Fifteen of these deaths were associated with 2009 influenza A (H1N1) virus infection, and six were associated with an influenza A virus for which the subtype was undetermined. The proportion of outpatient visits for influenza-like illness (ILI) was 5.5% which is above the national baseline of 2.3%. All 10 regions reported ILI above region-specific baseline levels. Forty-three states reported geographically widespread influenza activity, Puerto Rico and seven states reported regional influenza activity, the District of Columbia reported local influenza activity, and Guam and the U.S. Virgin Islands reported sporadic influenza activity.

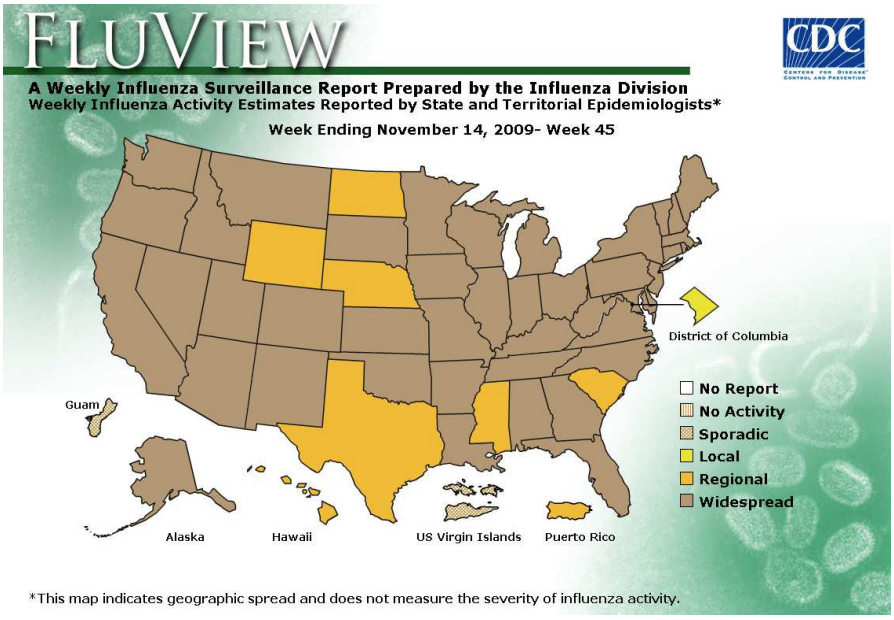
To access the entire CDC weekly surveillance report, visit http://www.cdc.gov/flu/weekly/fluactivity.htm

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2009-10



Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, August 30 – November 14, 2009





From http://www.cdc.gov/h1n1flu/updates/us/#totalcases:

U.S. Influenza and Pneumonia-Associated Hospitalizations and Deaths from Aug 30 – Nov 14, 2009

Cases Defined by	Hospitalizations	Deaths
Influenza Laboratory-Tests**	26,315	1,049

**States report weekly to CDC either 1) laboratory-confirmed influenza hospitalizations and deaths or 2) pneumonia and influenza syndrome-based cases of hospitalization and death resulting from all types or subtypes of influenza. Although only the laboratory confirmed cases are included in this report, CDC continues to analyze data both from laboratory confirmed and syndromic hospitalizations and deaths.

International (WHO, November 13): The level of seasonal influenza activity in most countries was low with only sporadic detections except in China where local outbreaks of H3 were reported as well as low levels of H1 and B. Sporadic seasonal influenza activity was observed in Australia (H3), Canada (H1,H3,B), China Hong Kong Special Administrative Region (H1,H3,B), Kenya (H1,H3,B), Russian Federation (H1,H3,B), Senegal (H3) and Tunisia (H3,B). Azerbaijan, Chile, Estonia, Georgia, Greece, Kyrgyzstan, Latvia, Lithuania, Serbia and Uzbekistan reported no influenza activity.

MDCH reported **WIDESPREAD INFLUENZA ACTIVITY** to the CDC for the week ending Nov. 21, 2009.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Avian and Novel Influenza Activity

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

International, Avian (OIE [edited], November 16): Country: France
Causal Agent Low pathogenic avian influenza virus (H5) Serotype(s) Pending
Date of first confirmation of the event: 13/11/2009; Date of Start of Event: 13/11/2009
Date of report: 16/11/2009; Date Submitted To OIE: 16/11/2009

Département: DEUX-SÈVRES; Commune: Saint Aubin du Plain; Location: Saint Aubin du Plain
Species: Birds; Susceptible: 9000; Cases: 0; Deaths: 0; Destroyed: 0; Slaughtered: 0

This outbreak was identified through active surveillance for avian influenza in breeding farms. Poultry in the farm do not show clinical signs. The farm includes 9,000 ducks ready to be force-fed divided into three batches of 3,000 ducks introduced respectively on 15 July 2009, 22 September 2009 and 22 October 2009. All 9,000 ducks will be euthanized and destroyed. Cleaning and disinfection measures and then a 21-day sanitation process will be applied. The newly introduced birds will be monitored during 21 days following their introduction into the farm. The epidemiological investigation showed that the virus has not circulated from the farm (no epidemiological related farm nor other farms in a 1-km-radius area).

Source of the outbreak(s) or origin of infection: Unknown or inconclusive
Control Measures Applied: Movement control inside the country, zoning
To be applied: Stamping out, disinfection of infected premises/establishment(s)
Animals treated: No
Vaccination Prohibited: Yes

Name of Laboratory: AFSSA (French Agency for Food Safety), Ploufragan
Test Type: real-time reverse transcriptase/polymerase chain reaction (RRT-PCR)
Date: 13/11/2009; Positive
Gene sequencing: 13/11/2009; Positive

International, Avian (OIE [edited], November 20): Country: Germany
Causal Agent Low pathogenic avian influenza virus (H5) Serotype(s) Pending
Date of first confirmation of the event: 20/11/2009; Date of Start of Event: 19/11/2009
Date of report 20/11/2009 Date Submitted To OIE 20/11/2009

Province: THURINGEN; District: Nordhausen; Sub-district: Werther; Location: Großwechsungen
Species: Birds; Susceptible: 2420; Cases: 25; Deaths: 25; Destroyed: 10; Slaughtered: 0
Outbreak summary: Total outbreaks = 1 (Submitted)

Epidemiological comments
Source of the outbreak(s) or origin of infection: Unknown or inconclusive
Control Measures: Control of wildlife reservoirs, movement control inside the country, screening, zoning, disinfection of infected premises/establishment(s)
To be applied: Stamping out
Animals treated: No
Vaccination Prohibited: Yes

Laboratory Type: OIE's Reference Laboratory; Name of Laboratory: Friedrich-Loeffler Institute
Test Type: virus isolation 20/11/2009; Positive

International, Surveillance (Norwegian Institute of Public Health [edited], November 20): The Norwegian Institute of Public Health announced today [20 Nov 2009] to have found a mutated version of the influenza pandemic (H1N1) 2009 virus in 3 patients in Norway who had tested positive for the new flu.

The Norwegian Institute of Public Health has analysed virus from a number of patients as part of the surveillance of the pandemic flu virus. The viruses have many similarities, but some mutations have been observed. This is normal and most of these mutations will probably have little or no importance.

However, one mutation has caught special interest. It has been found in 2 patients who died from the new influenza A (H1N1) and in one patient with severe influenza disease. These were the 1st 2 patients who died from the new influenza in Norway. Some of those who died later have been examined without finding the same mutated virus. The mutation could possibly make the virus more prone to infect deeper in the airways and thus cause more severe disease.

- We have analysed approximately 70 viruses from confirmed Norwegian cases and found the mutation in only these 3 patients, says Director General Geir Stene-Larsen at the Norwegian Institute of Public Health.

- Based on what we know so far, it seems that the mutated virus does not circulate in the population, but might be a result of spontaneous changes, which have occurred in these 3 patients.

- There is no indication that this change in the virus is of any importance for the effect of the vaccine or the effect of antiviral treatment, concludes Stene-Larsen.

International, Surveillance (WHO Pandemic H1N1 2009 briefing note 17, November 20): The Norwegian Institute of Public Health has informed WHO of a mutation detected in three H1N1 viruses. The viruses were isolated from the first two fatal cases of pandemic influenza in the country and one patient with severe illness.

Norwegian scientists have analysed samples from more than 70 patients with clinical illness and no further instances of this mutation have been detected. This finding suggests that the mutation is not widespread in the country.

The virus with this mutation remains sensitive to the antiviral drugs, oseltamivir and zanamivir, and studies show that currently available pandemic vaccines confer protection.

Worldwide, laboratory monitoring of influenza viruses has detected a similar mutation in viruses from several other countries, with the earliest detection occurring in April. In addition to Norway, the mutation has been observed in Brazil, China, Japan, Mexico, Ukraine, and the US.

Although information on all these cases is incomplete, several viruses showing the same mutation were detected in fatal cases, and the mutation has also been detected in some mild cases. Worldwide, viruses from numerous fatal cases have not shown the mutation. The public health significance of this finding is thus unclear.

The mutations appear to occur sporadically and spontaneously. To date, no links between the small number of patients infected with the mutated virus have been found and the mutation does not appear to spread.

The significance of the mutation is being assessed by scientists in the WHO network of influenza laboratories. Changes in viruses at the genetic level need to be constantly monitored. However, the significance of these changes is difficult to assess. Many mutations do not alter any important features of the virus or the illness it causes. For this reason, WHO also uses clinical and epidemiological data when making risk assessments.

Although further investigation is under way, no evidence currently suggests that these mutations are leading to an unusual increase in the number of H1N1 infections or a greater number of severe or fatal cases.

Laboratories in the WHO Global Influenza Surveillance Network closely monitor influenza viruses worldwide and will remain vigilant for any further changes in the virus that may have public health significance.

Michigan Wild Bird Surveillance (USDA, as of November 25): For the 2009 testing season (April 1, 2009-March 31, 2010), HPAI subtype H5N1 has not been recovered from any of the 107 Michigan samples tested to date, including 58 live wild birds, 35 hunter-killed birds and 14 morbidity/mortality specimens. H5N1 HPAI has not been recovered from 14,038 samples tested nationwide. For more information, visit the National HPAI Early Detection Data System at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at http://www.michigan.gov/emergingdiseases.

Please contact Susan Peters at PetersS1@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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Table 1. H5N1 Influenza in Poultry (Outbreaks up to November 5, 2009)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 11/12/09)

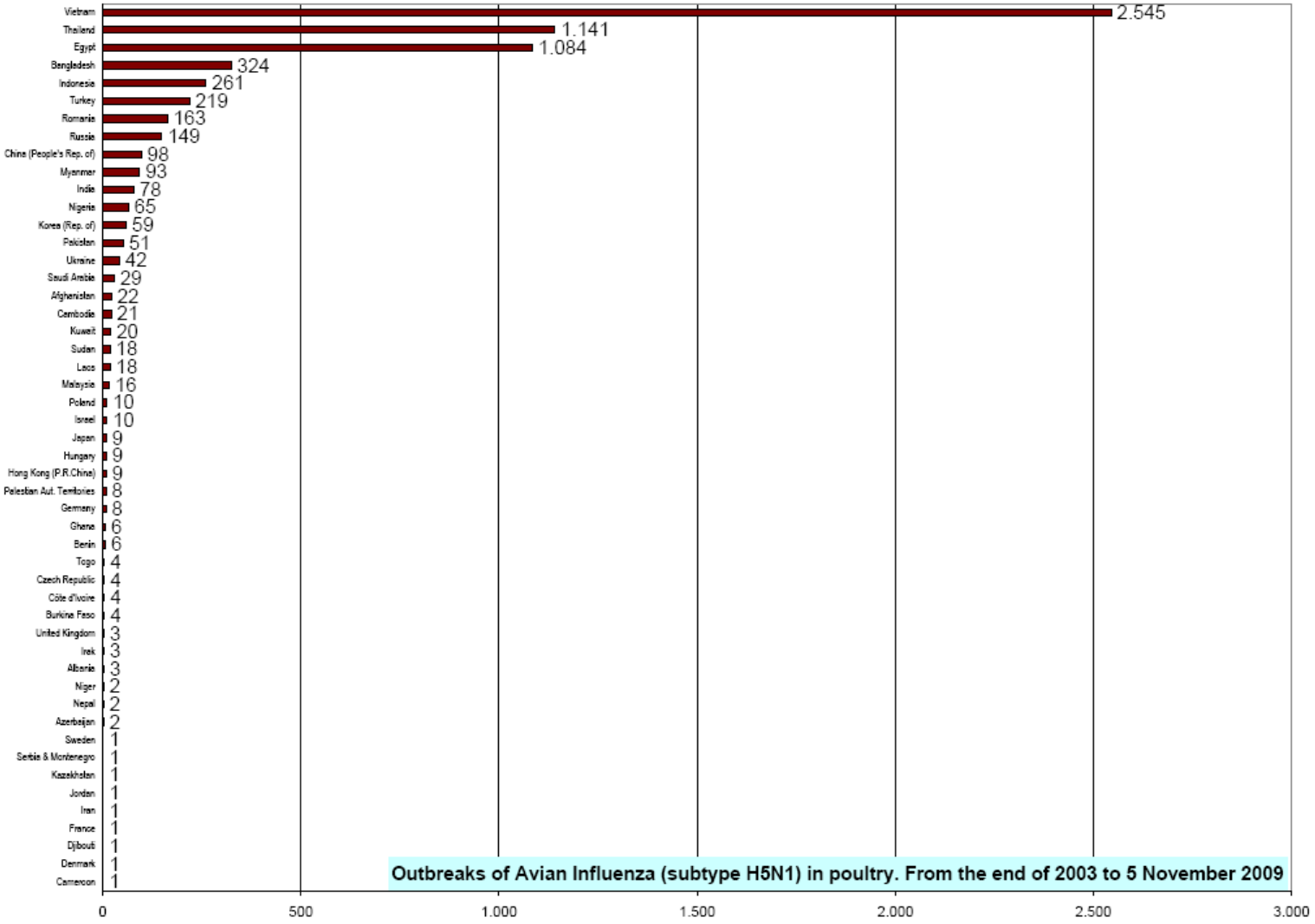

Table 2. H5N1 Influenza in Humans (Cases up to November 20, 2009)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_09_24/en/index.html Downloaded 11/20/2009)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	0	0	8	7
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	37	4	88	27
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	0	0	141	115
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	4	4	111	56
Total	4	4	46	32	98	43	115	79	88	59	44	33	48	12	443	262